Delta Operations for Salmonids and Sturgeon (DOSS) Group
Conference call: 5/21/13 at 9:00 a.m.

Objective: Provide advice to the Water Operations Management Team (WOMT) and National Marine Fisheries Service (NMFS) on measures to reduce adverse effects from Delta operations of the Central Valley Project and the State Water Project on salmonids and green sturgeon. DOSS will work with other technical teams. DOSS notes and advice can be found at: http://www.swr.noaa.gov/ocap/doss.htm.

DWR: Mike Ford, Edmund Yu, Kevin Reece, James Gleim, Dan Yamanaka, Loi Tran
FWS: Craig Anderson, Leigh Bartoo
NMFS: Barbara Rocco, Jeff Stuart, Barb Byrne, Garwin Yip
Reclamation: Russ Yaworsky
DFW: Bob Fujimura, Krystal Acierto
SWRCB: Scott Ligare
EPA, USGS: not present

Agenda

1. Fish monitoring
2. Current operations
3. RPA implementation update
4. Quick check-in re: DOSS annual report TOC
5. DOSS advice?
6. DOSS meeting change because of Memorial Day holiday on 5/27/13

Fish Monitoring: The following table presents fish monitoring data. Unless otherwise noted, reported sizes are fork length. See also: http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm.

Location	Chipps Is. Midwater Trawl	Sacramento Trawls	Mossdale Kodiak Trawl	Glenn-Colusa ID RST	Tisdale RST	Beach Seines
Sample Date	5/13, 15, 17	5/14, 16	5/14–5/20	5/14–5/20	5/14–5/20	5/13–5/15, 5/17
Total Catch	**758**	**9**	**983**	**1,158**	**19**	**56**
FR	510	8	976 ±1 with suture but non-clipped	980	14	9
WR						
SR	97			2		
LFR						
Ad-Clipped Chinook	143	1		174 (fall-run sized)	5	
DS						1
Splittail	2 (137 & 342 mm)					46
Longfin	6					
SH (ad-clip)			4 (ad-clipped & sutured very likely from the 6-yr			

			study)			
SH (wild)			3	2		
W. Temp. (avg. °F)	66.6	70.0		61.0	66.0	68.7
Flows (avg. cfs)					8,830	
Turbidity (avg. NTU)	34.9	11.3		2.41	11.1	25.9
WR/LFR Avg. CPUE						
FR/SR Avg. CPUE					0.079	

Key: FR = Fall run; LFR = Late-fall run; SR = Spring run; WR = Winter run; SH = Steelhead; DS = Delta smelt; LFS = longfin smelt; CPUE = catch per unit of effort; ACT = acoustic tag; N/A = not available

Glenn-Colusa: No green sturgeon reported.

Mossdale: Catch of juvenile Chinook salmon at Mossdale began in early April (see monitoring charts from Yu (DWR) that include sampling since August 2012; pulse beginning in early April is NOT an artifact of the DFW sampling beginning 4/2). The season total for Chinook is 4,498, which is the largest catch to date from 2005 through 2013 (the period included in the reports from Steve Tsao, DFW) and about twice the number of fish in the next highest catch to date within that same period.

Other Monitoring: It was noted that "older juvenile"-sized Chinook (a category that includes young-of-year [YOY] winter-run and late-fall-run Chinook and yearling fall-run and spring-run Chinook), are not being seen now at many of the monitoring sites. The peak of older juveniles at Chipps Island was in March and April. When looking at patterns of "fry, smolts" (a category that includes YOY fall-run and spring-run Chinook), peak passage at Red Bluff Diversion Dam was observed from late December through February. Catch of fry/smolt at Tisdale peaked around early May, associated with the production release of fall run (Byrne [NMFS)] noted that a continuous sampling record is not available this year at Tisdale). Fry/smolts have been caught regularly in the Sacramento seines and trawls since December, while at Chipps Island, catch of YOY fall- and spring-run Chinook increased in mid-April.

Fish Salvage: Geir Aasen (DFW) provided the fish salvage report covering 5/13/13 through 5/19/13 and emailed it to DOSS participants. This report is posted at ftp://ftp.delta.dfg.ca.gov/salvage and you can locate the table under folder "DOSS salvage tables" (also try http://www.dfg.ca.gov/delta/apps/salvage/Default.aspx and click on "salvage FTP site").

DFW (Fujimura) report for 5/13–5/19

The number of salvaged steelhead markedly increased last week. There were 36 steelhead salvaged during the reporting period—24 non-ad-clipped and 12 ad-clipped—which were distributed over 3 dates. The estimated daily loss densities of on-ad-clipped steelhead on these 3 dates ranged from 0.89 to 9.05 fish/TAF and exceeded the first-stage loss criterion (8 fish/TAF multiplied by volume exported) on 5/13. The season total of salvaged non-ad-clipped steelhead is 741.

No non-ad-clipped older juvenile Chinook salmon were salvaged last week. The salvage numbers of non-ad-clipped fall-run-sized juvenile Chinook increased.

There were 778 non-ad-clipped juvenile Chinook salmon salvaged during the reporting period, of which 36 were spring-run sized and 742 were fall-run sized. No ad-clipped Chinook were salvaged last week.

No sturgeon were salvaged during the reporting period.

DFW (Fujimura) report on preliminary salvage estimates for 5/20/13

At the CVP, 32 non-ad-clipped fall-run-sized Chinook were salvaged; no steelhead were salvaged. At the SWP, 12 non-ad-clipped spring-run-sized and 66 non-ad-clipped fall-run-sized Chinook, and 8 ad-clipped steelhead were salvaged. Four of the steelhead salvaged were reported as having sutures. No white or green sturgeon were reported. No loss figures have been reported for 5/20; however, because all steelhead were ad-clipped, the loss of non-ad-clipped steelhead is 0 and does not exceed the steelhead daily loss trigger in Action IV.2.3 (OMR flow management).

DOSS Weekly Salvage Update
Reporting Period: May 13-19, 2013
Prepared by Bob Fujimura on May 20, 2013 2100
Preliminary Results -Subject to Revision

Criteria	13-May	14-May	15-May	16-May	17-May	18-May	19-May	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0.0
Wild steelhead	9.05	1.37	0	0	0	0	0.89	↘	1.6
Exports									
SWP daily export	2,184	2,014	2,184	1,845	1,452	1,452	1,452	↗↘	1,798
CVP daily export	1,944	1,944	1,942	1,712	1,609	1,603	1,602	↗↘	1,765

Loss Density = fish lost/TAF; water export = AF; Trend = compared to previous week; wild = adipose fin present
Loss = estimated number of fish lost at the CVP and SWP Delta export facilities based on estimated salvage (see below)

Chinook Salmon Weekly/Season Salvage and Loss
Combined salvage and loss for both CVP and SWP fish facilities
Race determined by size at date of capture; hatchery = adipose fin missing;

		Weekly Total			Season Total	
Category		Salvage	Loss	Trend	Salvage	Loss
Wild						
	Winter Run	0	0	→	271	731
	Spring Run	36	127	→	893	2,412
	Late Fall Run	0	0	→	85	277
	Fall Run	742	1,632	↗	3,954	7,151
	Unclassified	0	0	→	8	5
	Total	**778**	**1,759**		**5,211**	**10,576**
Hatchery						
	Winter Run	0	0	→	187	595
	Spring Run	0	0	→	7	15
	Late Fall Run	0	0	→	781	2,898
	Fall Run	0	0	→	415	1,522
	Unclassified	0	0	→	0	0
	Total	**0**	**0**		**1,390**	**5,030**

Trend = weekly loss per race; Salvage = estimated number of fish collected by the CVP and SWP fish protective facilities per unit of time

Steelhead Weekly/Season Salvage and Loss
Combined salvage and loss for both CVP and SWP fish facilities

	Weekly Total			Season Total	
Category	Salvage	Loss	Trend	Salvage	Loss
Wild	24	46	↘	741	2,137
Hatchery	12	37	↗	693	1,795
Total	**36**	**83**		**1,434**	**3,932**

State Water Project loss = salvage x 4.33; Central Valley Project loss = salvage x 0.68

Compiled by Bob Fujimura on May 20, 2013

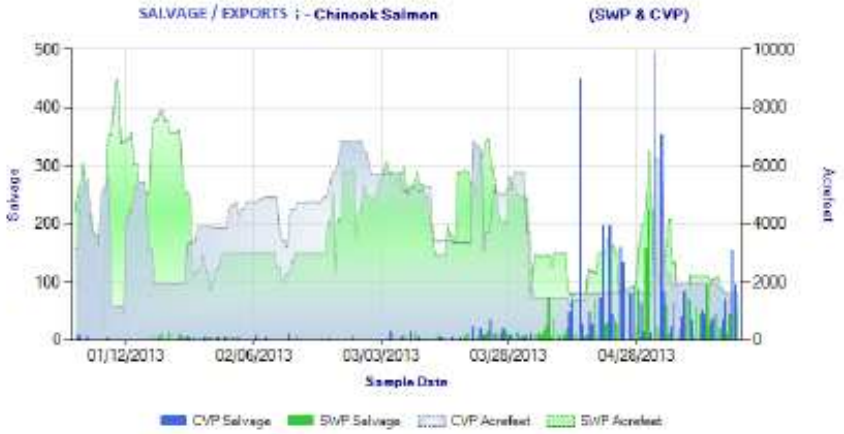

Figure 1. Daily salvage of Chinook salmon (all races) and water exports from the state and federal fish salvage facilities during January 1 through May 19, 2013. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx.

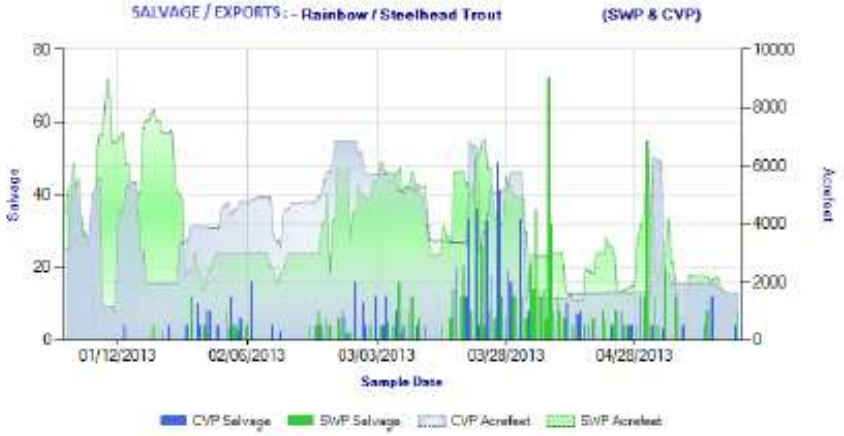

Figure 2. Daily salvage of steelhead and water exports from the state and federal fish salvage facilities during January 1 through May 19, 2013. Graph obtained from the DFG salvage monitoring web-page: http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx

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Possible Source of Sutured (*i.e.*, Tagged) but Non-Ad-Clipped Steelhead: In a previous DOSS meeting, there was a question about what research programs were in place that would allow tagging of wild steelhead. Byrne checked with NMFS staff on various permits in place and

reported that there are eight different research permits that allow tagging of non-ad-clipped steelhead; these fish could be caught in rotary screw traps (RSTs) or by other sampling methods. NMFS will follow up with the permit holders to ask whether they have done any tagging of non-ad-clipped steelhead this year.

Hatchery Coded-Wire-Tag (CWT) Results (as of 5/19/13, see table below): There have no additional losses of CWT since 5/4.

CONFIRMED HATCHERY (ADIPOSE FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2012/2013

Release Date	CWT Race	Hatchery	Release Site	Release Type	Confirmed Loss	Number Released[1]	Total Entering Delta	% Loss of Number Released[2]	% Loss of Total Entering Delta[3]	First Concern Level	Second Concern Level	Date of First Loss[4]	Date of Last Loss[4]
11/5/2012	F	Mokelumne River Hatchery	Mokelumne River	**	599.45	100,633	n/a	0.596	n/a	n/a	n/a	12/5/2012	4/9/2013
11/29/2012	LF	Coleman NFH	Battle Creek	Production	4100.48	805,842	n/a	0.509	n/a	n/a	n/a	12/9/2012	4/21/2013
12/18/2012	LF	Coleman NFH	Battle Creek	Spring Surrogate	74.85	72,874	n/a	0.103	n/a	0.5%	1.0%	12/31/2012	3/23/2013
1/8/2013	LF	Coleman NFH	Battle Creek	Spring Surrogate	138.70	79,000	n/a	0.176	n/a	0.5%	1.0%	1/20/2013	3/27/2013
1/25/2013	LF	Coleman NFH	Battle Creek	Spring Surrogate	24.40	85,600	n/a	0.029	n/a	0.5%	1.0%	2/9/2013	3/31/2013
2/7/2013	W	Livingston Stone NFH	Caldwell Park	Production	8.59	182,662	68,525	0.005	0.009	0.5%	1.0%	3/26/2013	3/26/2013
4/0 to 4/18/2013	S	Feather River Hatchery	Boyd's Pump	**	1.33	1,031,191	n/a	0.0001	n/a	n/a	n/a	4/30/2013	5/3/2013
4/10 to 4/11/2013	F	Coleman NFH	Battle Creek	Production	2.33	1,585,600	n/a	0.0001	n/a	n/a	n/a	5/2/2013	5/4/2013
4/17 to 4/18/2013	F	Mokelumne River Hatchery	Sherman Island Rd	**	0.00	112,447	n/a	0.000	n/a	n/a	n/a	5/4/2013	5/4/2013

UNCONFIRMED HATCHERY (ADIPOSE FIN CLIPPED) CHINOOK SALMON LOSS AT THE SWP & CVP DELTA FISH FACILITIES, 2012/2013

Facility	Unknown CWT Loss[6]	Unread CWT Loss[7]	Unknown Hatchery Loss[7]	Acoustic Tag Loss[8]	Number of Unassigned CWTs[9]
SWP	53.58	0.00	0.00	17.93	1
CVP	5.20	0.00	0.00	0.00	0
TOTAL	58.78	0.00	0.00	17.93	1

SWP and CVP adipose fin clipped Chinook lost from 10/1/2012 through 5/19/2013.
[1]Number released with the adipose fin clipped and a coded-wire tag (CWT).
[2]% Loss of Number Released = (Confirmed Loss/Number Released)*100.
[3]% Loss of Total Entering Delta= (Confirmed Loss/Total Entering Delta)*100.
[4]Date of first and last loss accounts for all CWT loss even those from special studies where salvage and loss=0.
[5]Adipose fin clipped Chinook was observed during fish count, but tag code could not be determined (e.g., damaged tag, lost tag, no tag, or Chinook accidentally released).
[6]Adipose fin clipped Chinook was collected during fish count and has not been processed yet.
[7]CWT has been read, but hatchery release information not yet available.
[8]Adipose fin clipped Chinook released due to presence of sutures.
[9]CWT cannot currently be assigned to a salvage record with certainty since the CWT was lost and then found. CWT may be assigned to a salvage record if new information is available.
** Information not yet available.

DWR-DES Revised 5/20/2013
Preliminary data from DFW, DWR, FWS, and Reclamation; subject to revision.

Operations (5/21/13)

SWP		CVP	
Exports (cfs)			
Clifton Court Forebay	700	Jones Pumping Plant	800
Reservoir Releases (cfs)			
Feather - Oroville	3,000	American - Nimbus	1,000
		Sacramento - Keswick	13,000 (increased to compensate for spring tide and opening DCC this weekend)
		Stanislaus - Goodwin	300
Reservoir Storage (in TAF, % of capacity)			
San Luis (SWP)	361 (39)	San Luis (CVP)	565 (59)
Oroville	2,898	Shasta	3,515
New Melones		Folsom	719
Delta Operations			
DCC	Closed; will open at 10:00 a.m. on 5/24 for holiday weekend; will close again on 5/28 at 10:00 a.m.	Sacramento River at Freeport (cfs)	11,733

Outflow Index (cfs)	9,900	San Joaquin River (cfs) at Vernalis	1,278
Total Delta Inflow (cfs)	14,201	OMR (daily) (cfs)	
Water Temperature (°F)		OMR 5-day avg (cfs)	-795
X2 (km)	78	OMR 14-day avg (cfs)	-643
E/I (%)	9.8		

Water Quality: D-1641 water quality standards in the western Delta are controlling reservoir releases on the Sacramento River. There was a question on whether a request would go to the SWRCB to relax the Emmaton standard; no decision has been made. One participant opined that the benefits of a relaxation are diminishing as we near the end of May.

Smelt Working Group (SWG): Current operations are adequately protective for both delta and longfin smelt. The current water temperature in Clifton Court Forebay is approximately 71.6°F (20°C). The offramp for actions to protect delta smelt is 77.0°F (25°C) for 3 consecutive days at Clifton Court Forebay or June 30, whichever occurs first.

Based on historical salvage and spawning patterns for smelt, the current year appears to be showing an "early" pattern. Bartoo (FWS) noted that a number of SWG members have mentioned that it appears to be an "early season" and so would not be surprised if, come June, there is not much smelt salvage observed.

DOSS Annual Report: NMFS will incorporate comments received from DOSS on the DOSS annual report table of contents (TOC), and will send a revised TOC out to DOSS. DOSS members were asked to review the TOC and, in particular, the assignment to individuals to write specific sections (if not already done) and submit any revisions to Byrne by 5/24. Absent comments to the contrary, NMFS will presume that DOSS members are onboard with the TOC contents and writing assignments. Yip (NMFS) will forward the revised TOC to the Implementation Management Team for review at its June meeting.

RPA Implementation Update:

Action IV.2.3 (OMR flow management)

DWR and Reclamation exceeded the first-stage non-ad-clipped steelhead loss trigger of NMFS RPA Action IV.2.3 (OMR flow management) on 5/13, which required the 5-day OMR average to be no more than 25% more negative than -3,500 cfs for a minimum of 5 days, and until the last 3 consecutive days of daily loss are less than the trigger value. Day 1 of the action response was 5/14. Effective 5/20, DWR and Reclamation had satisfied the action response for the first-stage trigger in Action IV.2.3 and were allowed to operate an OMR flow no more negative than -5,000 cfs.

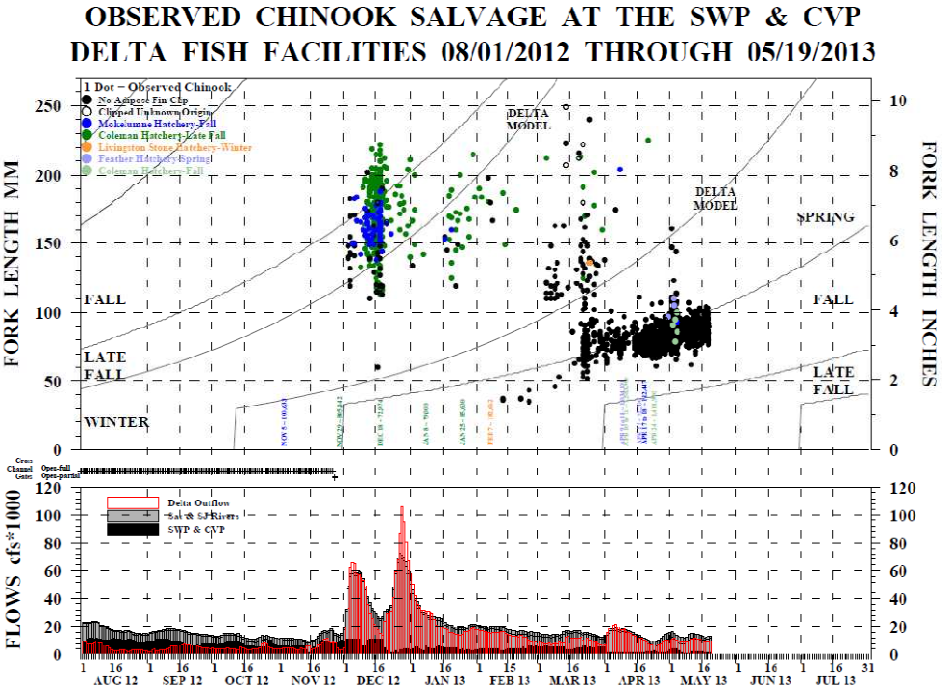
Action IV.2.1 (I:E ratio)

The 1:1 ratio is in effect given the "Critical" yeartype on the San Joaquin Basin. Current flow at Vernalis is approximately 1,300 cfs. The projects are currently operating to the health and safety exception to Action IV.2.1 and exporting a minimum combined 1,500 cfs.

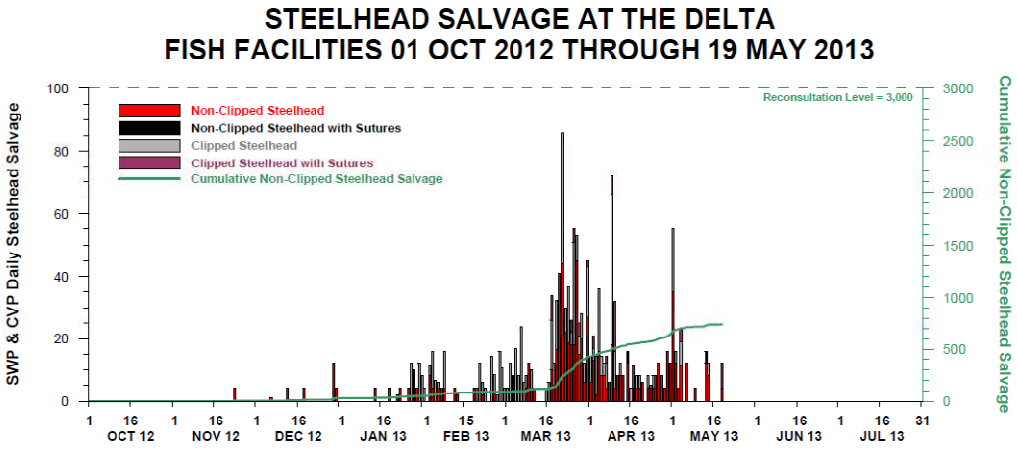
DOSS Advice to WOMT and NMFS: None.

Next Meeting: Given that Monday, 5/27, is a holiday, DOSS agreed that its next conference call be scheduled for 5/29/13, at 9:00 a.m.

Below are graphs provided by DWR for Chinook salmon and steelhead salvaged or lost at the Delta fish facilities and observed in the Sacramento and San Joaquin rivers. For additional graphs, please visit the DWR website at: http://www.water.ca.gov/swp/operationscontrol/calfed/calfedmonitoring.cfm.

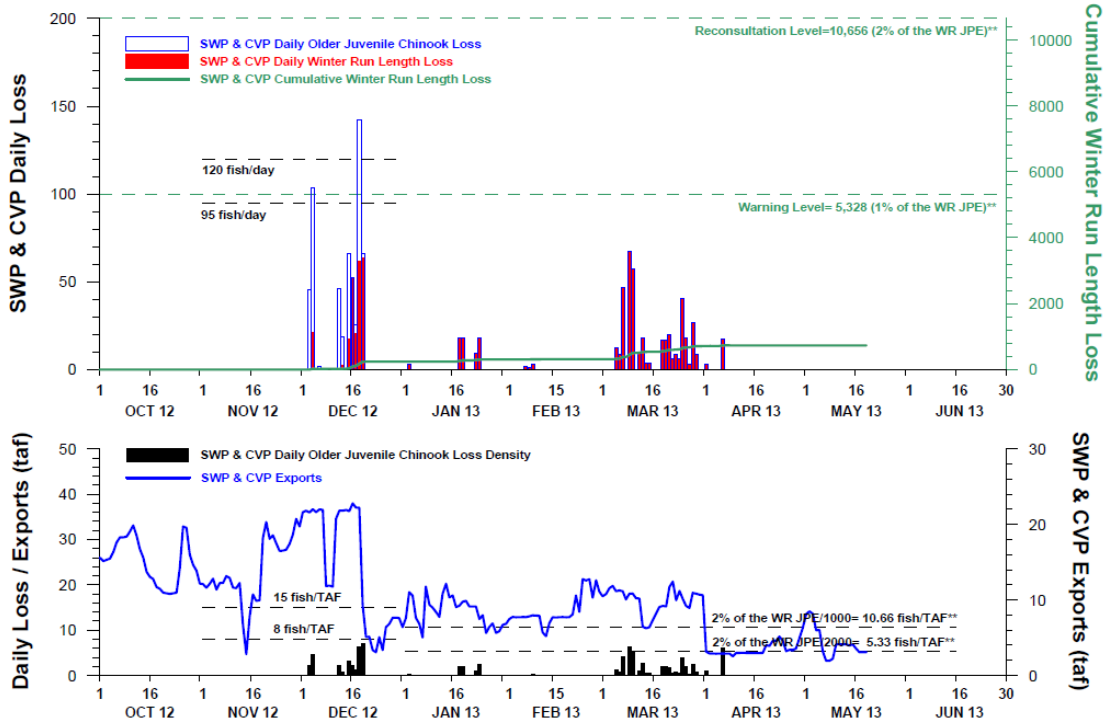


DWR-DES 20 MAY 2013
Preliminary data from DFW, DWR, FWS, Reclamation, and CDEC; subject to revision.
*Chinook outside of the length-at-date criteria (Delta model) are not reported.



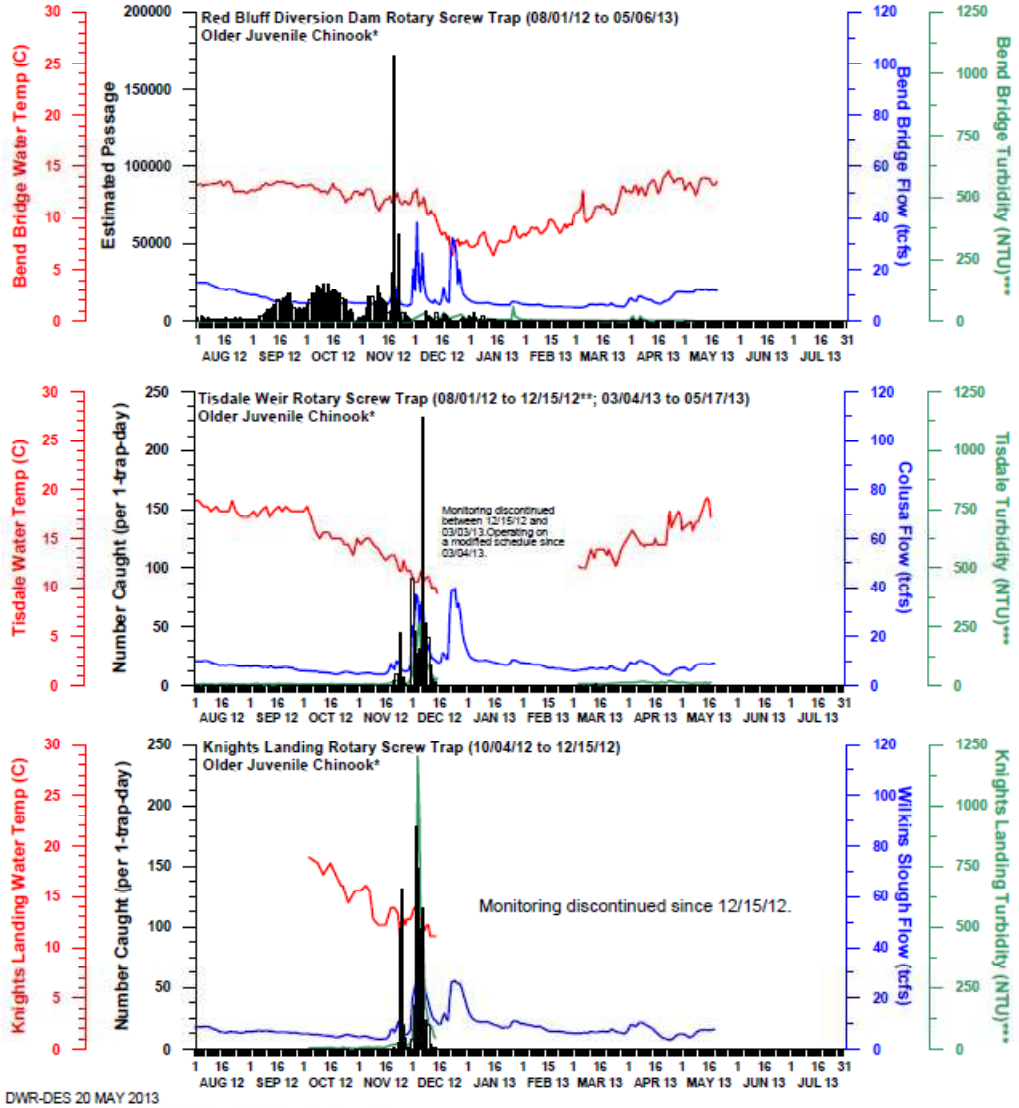
DWR-DES 20 MAY 2013
Preliminary data from DFW; subject to revison.

NON-CLIPPED WINTER RUN & OLDER JUVENILE CHINOOK LOSS AT THE DELTA FISH FACILITIES 01 OCT 2012 THROUGH 19 MAY 2013



DWR-DES 20 MAY 2013
Preliminary data from DFW; subject to revision.
*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Delta model).
**Based on the final juvenile production estimate (JPE), which comes out to be about 532,809 non-clipped winter run (WR) Chinook entering the Delta during water year 2013.

NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE SACRAMENTO RIVER



DWR-DES 20 MAY 2013

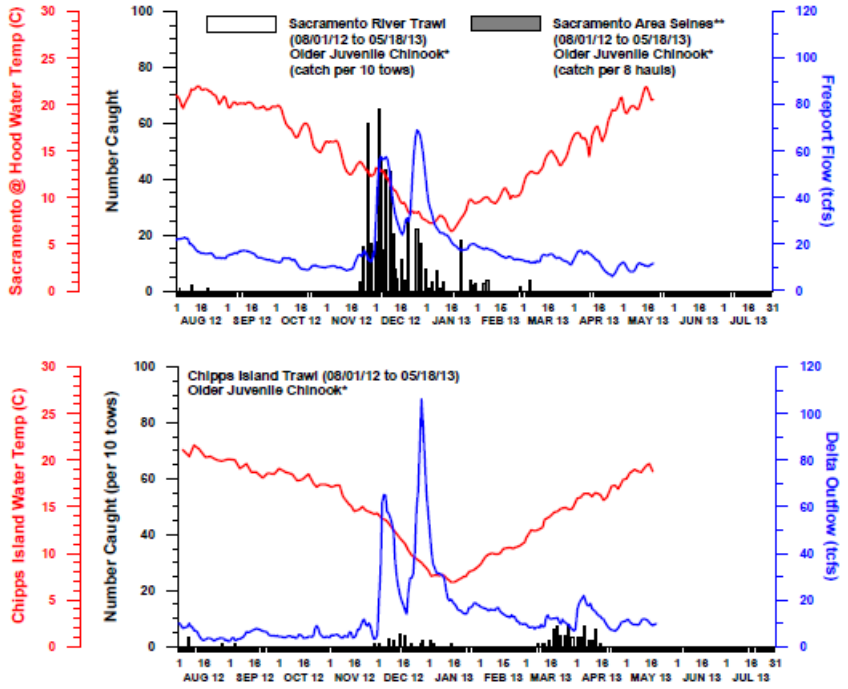
Preliminary data from DFW, FWS, and CDEC; subject to revision.

*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).

** Tisdale Weir: One older juvenile caught on 9/14 and 43 older juveniles caught on 11/25. However, CPUE was not calculated due to problems with the cone clickers. As a result, data are not presented on the graph.

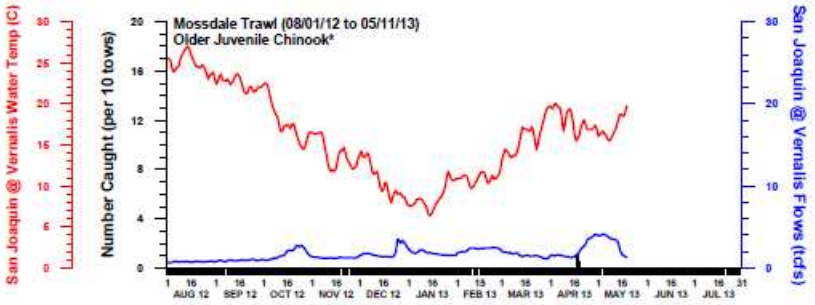
***Turbidity is a disorete measurement and is not measured continuously. Therefore, data are interpolated on days when turbidity was not measured.

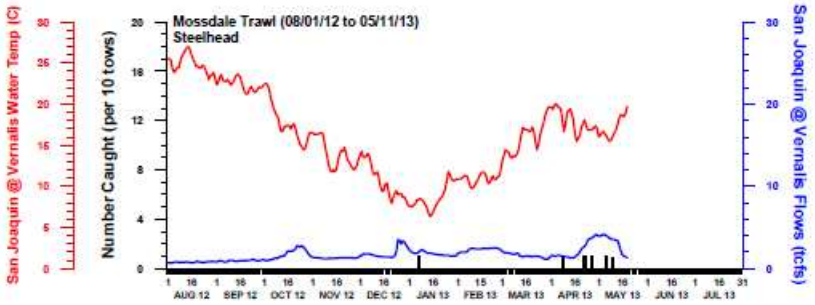
NUMBER OF UNMARKED OLDER JUVENILE CHINOOK MEASURED IN THE LOWER SACRAMENTO RIVER & CHIPPS ISLAND



DWR-DES 20 MAY 2013
Preliminary data from FWS and CDEC; subject to revision.
*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).
**Sacramento area seine route consists of the following seine sites: Verona, Elkhorn, Sand Cove, Discovery Park, American River, Miller Park, Sherwood Harbor, and Garcia Bend. Bars are stacked if Chinook caught from the trawl and seines are from the same day.

NUMBER OF UNMARKED OLDER JUVENILE CHINOOK AND UNMARKED STEELHEAD MEASURED IN THE SAN JOAQUIN RIVER





DWR-DES 20 MAY 2013
Preliminary data from DFW, FWS, and CDEC; subject to revision.
*Older juvenile Chinook defined as all Chinook above the minimum winter run length-at-date criteria and below the maximum size included in the length-at-date criteria (Frank Fisher model).